

Abstract of the Disclosure

A method of making a carboxylated carbohydrate is disclosed, cellulose being a preferred carbohydrate material. Carboxylated cellulose fibers can be produced whose fiber strength and degree of polymerization is not significantly sacrificed. The method involves the use of a catalytic amount of a hindered cyclic oxammonium compounds as a primary oxidant and chlorine dioxide as a secondary oxidant in an aqueous environment. The oxammonium compounds may be formed *in situ* from their corresponding amine, hydroxylamine, or nitroxyl compounds. The oxidized cellulose may be stabilized against D.P. loss and color reversion by further treatment with an oxidant such as sodium chlorite or a chlorine dioxide/ hydrogen peroxide mixture. Alternatively it may be treated with a reducing agent such as sodium borohydride. In the case of cellulose the method results in a high percentage of carboxyl groups located at the fiber surface. The product is especially useful as a papermaking fiber where it contributes strength and has a higher attraction for cationic additives. The product is also useful as an additive to recycled fiber to increase strength. The method can be used to improve properties of either virgin or recycled fiber. It does not require high α -cellulose fiber but is suitable for regular market pulps.